

**Descriptions of new species of DIURNAL LEPIDOPTERA
found within the United States.**

BY WM. H. EDWARDS.

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| 1. COLIAS ASTREA. | 6. ARGYNNIS EURYNOME. |
| 2. ANTHOCARIS JULIA. | 7. ARGYNNIS MEADII. |
| 3. NEOPHASIA MENAPIA, ♀. | 8. GRAPTA HYLAS. |
| 4. ARGYNNIS BREMNERII. | 9. SATYRUS CHARON. |
| 5. ARGYNNIS INORNATA. | 10. EREBIA MEADII. |

Colias Astraea, n. sp.

Male.—Expands 2 inches. Upper side pale ochraceous, very little tinted with orange on disks of secondaries from cell to marginal border and from base to hind margin of secondaries below cell, this color being not decided but only a tint; border of primaries pale black, of medium width, erose within, very little advanced on costa and sending out a short and attenuated spur on inner margin; border of secondaries very narrow, erose within, and unusually long, extending from above upper sub-costal nervule to below lower median; discal spot of primaries a short black streak; on secondaries wanting.

Under side of primaries yellow nearly as above, without orange; of secondaries yellow densely covered with black scales so as to obscure the whole surface; discal spot of primaries very narrow, black, enclosing a few yellow scales, of secondaries white, as in *Alexandra*, without a ring; no spot on costal margin; a scarcely perceptible pink tint at base; legs yellow, the tibia and tarsi faint pink; palpi yellow tipped with pink. (Antennæ wanting in the specimen described.)

From a single male taken near the Yellowstone Lake by the Hayden Expedition, in 1871. On the under side this species is nearest *Alexandra*; on the upper of a different shade of color from any of our species.

Anthocaris Julia, n. sp.

Male.—Expands 1.3 inch. Upper side pure white, black at base; primaries have a bright orange apical patch, edged outwardly by a sharply serrated black band which is broadest at apex and narrow as it descends the margin, but is not broken into distinct spots as in the allied species *Sara* and *Reakirtii*; on the arc a sinuous black bar nearly protracted to costal edge, and at its upper extremity expanded in direction of base to double its width elsewhere; from the lower third of hind margin proceeds a stripe of scattered black scales which borders the orange patch,

sometimes terminating a little below the lower outer corner of the discal bar but usually curving around the bar and separated from it, and even reaching the sub-costal nervule, but in no case forming a continuous stripe with the bar as is often seen in the two allied species; costal edge specked with black; secondaries usually immaculate but occasionally showing small marginal black spots on the nervules; fringes of both wings white, black at tips of the nervules. Under side white, the apex and apical portion of the hind margin yellow, between which color and the orange spot is a pinkish space, all much obscured by greenish brown scales; the orange spot reduced and paler; costal margin pinkish, thinly covered with small brown spots; on the arc a bent bar nearly bisected; secondaries have the nervures for one-third the distance from base orange, beyond to margin yellow; the surface thickly covered with irregular patches of greenish brown on which are sprinkled yellow scales.

Body grey-black above, beneath, thorax white, abdomen yellowish; the outer portion of the orbits of the eye orange; legs whitish, the femora orange; palpi furnished with intermingled white and black hairs; antennæ orange at base, grey-brown above, grey below; club black tipped with yellow.

Female.—Expands 1.1 inches. Upper side bright lemon-yellow; the orange spot as large as in male, paler, replaced by yellow next the apical border; sometimes, however, this yellow space is divided into spots edged by black scales, imitating the usual markings of *Sara*; the discal bar as in male but limited by subcostal nervure; fringes yellow, black at tips of nervules; under side yellow, marked as in the male.

From 22 specimens, 10 ♂, 12 ♀, taken by Mr. Mead, on the 9th 10th and 12th of June, 1871, in the pine woods of the mountains immediately surrounding the South Park, at Fairplay, Colorado. The species was not seen elsewhere. It was swift of flight and easily alarmed when it became very difficult to capture. In this respect and in its limited locality it offered a strong contrast to *A. Ausonoides*, which was found in all situations throughout the Territory.

This species may be readily distinguished from *Sara* by its size and by the far greater degree of mottled surface on secondaries; also by the sinuosity of the discal bar and the curvature and arrangement of the stripe from margin; the black border is proportionately narrower at apex, is continued down the margin without interruption and is very sharply serrated throughout. Nearly the same differences are found between *Julia* and *Reakirtii*, though some individuals of this last species have the secondaries as densely mottled as in *Julia* and similarly. In

some respects *Julia* is intermediate between the other two, but is more constant to its type than either. The female appears to be always yellow, whereas in *Sara* one half are yellow and in *Reakirtii* none. Besides this species and *Ausonoides*, Mr. Mead brought home *Creusa* of Doubleday, a few specimens of which were taken in company with *Ausonoides*. No other species of *Anthocaris* was seen.

Neophasia Menapia, Felder; Edw. But. of N. A.

Female.—Expands 2 inch. Upper side sordid white; primaries bordered on costa and at apex and on hind margin with fuscous as in male, enclosing in same manner white spots, at least five in number; secondaries differ from male in that the hind margin is bordered by a broad fuscous band, within which, next margin, are five large, rounded, soiled-white spots; each of these spots meets the margin which at that point is edged with orange. Under side of primaries nearly as above, except that the curved extremity of the costal band of upper side is separated and becomes a distinct spot on the lower part of the arc. Secondaries have the nervures all broadly bordered by fuscous, and crossed by a sub-marginal fuscous band corresponding to the anterior portion of the band above; the margin edged by orange spots in the interspaces; and the edge of both costal and abdominal margin more or less washed with same color; shoulder also orange.

Until quite lately the female of *Menapia* has been unknown or supposed to be similar to male. In the "Butterflies of North America," I have figured such a female erroneously. The true female has been brought from San Juan by Dr. Bremner and will be seen to differ widely from the male.

Argynnis Bremnerii, n. sp.

Primaries long, narrow, produced apically; hind margin convex or nearly straight.

Male.—Expands 2 to 2.4 inches. Upper side yellow-fulvous, dark brown at base and nearly up to mesial band; hind margins bordered by two fine parallel black lines, the intervening fulvous space divided by the black nervules; resting on these lines are pale fulvous, double-convex spots, rather sub-ovate next apex of primaries, and each preceded by a black spot which at apex of primaries and on whole of secondaries are lunate, but on posterior half of primaries serrate; the rounded spots small; the mesial zigzag band very heavy on both wings and confluent; the marks in cell of primaries as in *Monticola*, the first of the three sinuous bars being usually confluent at its lower extremity with the second; in the sub-median interspace a sagittate spot; see-

ondaries have on the arc a heavy black spot like the letter C inverted, connected with the mesial band by a black bar that crosses the lower sub-costal interspace; fringes yellowish, black at tips of nervules.

Under side of primaries red-fulvous next base and over inner margin ferruginous along the nervules, pale buff apically; spots as above; the ferruginous sub-apical patch encloses two or three imperfectly silvered spots; the marginal spot also imperfectly silvered; the black lunules replaced by ferruginous. Secondaries ferruginous from base to outside the second row of spots; space between this and first rows pale buff, somewhat irrorated posteriorly with ferruginous; the seven marginal silver spots narrow, sub-triangular, edged above with ferruginous; the seven of second row are each narrowly edged with black, the first three nearly equal, the fourth minute, the fifth large, sub-rotund, the sixth sub-rectangular, the seventh lunate; in the third row, each edged with black, the first and third nearly equal, lunate, the second sub-pyriform, cut by the ferruginous arc; in cell a small round spot, and three spots at origin of nervures; shoulder well silvered; abdominal margin slightly.

Body black covered with fulvous hairs, beneath grey-fulvous; legs buff; palpi buff, fulvous in front, fuscous at tip; antennæ fuscous above, fulvous below; club black, fulvous at tip.

Female.—Expands 2.7 inches. Upper side similar to male, the marginal lines and lunate spots confluent, forming a broad, black band the enclosed fulvous spots much paler than the ground; black markings heavier than on male, and basal portions still more obscured.

Under side of primaries fiery-red, ochraceous at apex; the silver spots distinct, three sub-apical and six or seven marginal; secondaries ferruginous at base and on disk mottled with ochraceous; the band clear ochraceous; the silver spots shaped as in male, but larger and well silvered.

From 2 ♂, 1 ♀, taken on San Juan Island by Dr. Bremner of H. M. Ship *Zealous*, in 1871, and in the collection of Henry Edwards, Esq. of San Francisco.

This species is sufficiently unlike any of our *Argynnides*, and I hardly know which is its nearest ally. In heaviness of the black markings it resembles *Monticola*, in the beauty of the silvering *Cybele*, while in shape of the wings it is like *Halcyone*.

***Argynnis Inornata*, n. sp.**

Primaries strongly arched, produced apically, straight on hind margin in the male, slightly concave in the female.

Male.—Expands 2.5 inches. Upper side red fulvous much ob-

seured from the mesial band to base so as to render the blackish markings indistinct as compared with *Hesperis*, the nearest allied species; margins bordered by two parallel lines that are confluent on primaries and on upper half of secondaries, forming a black band through which faintly appears a tint of fulvous in the interspaces; on this band rests a connected series of black lunules enclosing pale fulvous spots; the other black markings as in *Hesperis*, but heavier; on disks of secondaries paler spots corresponding to the second row on underside; the black markings in cell of primaries next anterior to the spot on arc strongly bent so as to enclose a sub-quadrate space which is paler than the ground color; fringes luteous, black at tips of all nervules. Under side of primaries cinnamon brown at base and up to the mesial black band and within the P like spot on the arc; but the sub-quadrate space and that portion in cell next posterior is buff; rest of wing buff, including the sub-marginal and sub-apical spots.

Secondaries reddish-brown from base to outside of second row of spots, the band between this and outer row buff and immaculate; the marginal spots large, broad, sub-triangular, very slightly edged above by brown; those of second row mostly large, broad-oval; of the third row, the first on costa is nearly round, the second trapezoidal, the third a dash only; the spots of the second and third rows lightly edged above with black; two round spots in black rings in cell, a long oval at base of sub-median and a dash at base of sub-costal; all these buff, scarcely differing from parts of the ground color, and without silver.

Body covered with fulvous hairs, grey buff beneath, abdomen buff; legs buff, palpi same, fulvous in front and at tip; antennæ black above fulvous below; club black, tip fulvous.

Female.—Expands 2.7 inches. Upper side paler, the general appearance more that of an *Euptoieta*, the whole outer portion of the wings, including the sub-marginal spots and the discal spots of secondaries faded to a whitish ochraceous; in cell of primaries the space within the P and that between the two black lines next base deep orange fulvous, rest of cell of same shade as the disk, the subquadrate space conspicuous; under side of primaries orange fulvous instead of cinnamon-brown; secondaries next base pale brown mottled with buff, the spots shaped as in male but greatly enlarged; on the submarginal spots of secondaries may be seen a few scales of silver.

From a pair belonging to the collection of James Behrens, Esq., of San Francisco, and taken at Downieville, California.

Argynnis Earynome, n. sp.

Primaries slightly arched, rounded apically; hind margin convex.

Male.—Expands from 1.7 to 2 inches. Upper side uniform yellow fulvous, very little dusky at base; hind margins of both wings edged by a common conspicuous black band formed by the usual parallel lines and the lunules anterior, all of which are confluent, the lunules enclosing fulvous spots; the rounded spots next preceding small; across the disk of each wing a delicate confluent zigzag band, before which, on primaries, are the usual cellular inscriptions; at the base of lower median interspace a black mark and a sagittate spot below; on cell of secondaries a spot like the letter C inverted; fringes luteous, on primaries only cut with black at tips of nervules. Under side of primaries pale buff, the disk and a narrow space along the nervules pale ferruginous; the three upper or sub-apical spots silvered as well as the five upper marginal spots.

Secondaries yellow buff throughout, but from base to second row of spots mottled with pale ferruginous and olivaceous, the latter, in fresh specimens often a decided green; the band between the two outer rows of the spots broad, yellow-buff and immaculate, except that on the upper edge are olivaceous or green shadows projected from the silver spots; the spots of the outer row are triangular, those of the second long oval, the 1st and 5th equal and the 2nd, 3rd and 6th narrower than the 1st but equally long, the 4th small, the 7th lunate, all delicately edged by black above; in the third row are three large spots, the 1st and 3rd lunular, the 2nd subquadrate, all edged with black above in cell a round spot in black ring; a long oval in the interspace below and a dash of silver at base of cell and also of subcostal interspace; shoulder and abdominal margin well silvered.

Body above black covered with dark fulvous hairs; beneath buff; legs buff; palpi buff, fulvous above at tip; antennæ black annulated with greyish above, fulvous below; club black tipped with bright fulvous.

Female.—Expands 2 inches. Color paler, the sub-marginal spots whitish, the black marginal band broader and all the markings heavier.

This pretty species I have known for some years and had supposed it to be *Astarte*, Doubleday. But Mr. A. G. Butler, to whom I sent a specimen for comparison with the type of *Astarte* in the British Museum Collection, writes me that it is not that species, which, he adds, resembles rather a *Melitæa* in the character of its markings on the under side. Mr. Mead found the species common throughout Colorado, flying among the grasses and along the streams, frequently alighting and

easily taken. Fresh specimens are beautifully ornamented on the under surface, the silver being conspicuous and the yellow and green bright. Among a large number taken by Mr. Mead, one male was without silver, the spots being clear yellow.

Argynnis Meadii. n. sp.

Primaries slightly arched, but little produced, straight on hind margin.

Male.—Expands 2.2 inches. Upper side bright fulvous, very little obscured at base; hind margins bordered by two fine parallel lines enclosing throughout a narrow fulvous space, divided by the black nervules; upon these lines rest a confluent series of black spots, those next apices and next anal angle lunate, the remainder, on primaries, nearly serrate and those on middle of secondaries sharply serrate, all enclosing fulvous spots; the rounded spots next preceding moderately large; the mesial zigzag band common, narrow and uniform; in cell of primaries the usual inscriptions; at origin of lower branch of median a black mark, and below, in next interspace, a sagittate spot; discal spot on secondaries shaped like the letter C inverted; the second row of silver spots of under side are indicated above by a slightly paler space; fringes of primaries almost wholly black, there being merely a little luteous against the middle of each interspace; of secondaries wholly luteous, except a little black at tips of the posterior nervules. Under side of primaries pale cinnamon brown at base and along the nervures of disk, remainder light buff, except that the hind margin and apical portion are of a delicate yellow-green; the five upper marginal spots are well silvered and sub-apically are three others, the middle one being conspicuous.

Secondaries wholly golden-green, a sub color of buff showing along the middle of the band between the outer rows of spots; all the spots well silvered; of the seven marginal, the one next anal angle is sublunate, the next three are broad and sharply serrate, the two following less serrate and the last at outer angle sub-ovate; all these completely edged with black; the second row consists of seven, mostly long oval, the 1st, 2nd and 6th from costa of equal breadth, the 3rd narrower, the 5th very broad, the 4th a point, the 7th irregular, all heavily edged above with black, and slightly elsewhere; the third row of four, the 1st sub-rotund, the 2nd trapezoidal, the 3rd and 4th rather dashes of silver, all edged above only with black; in the cell two rounded spots in black circles, a long oval in sub-median interspace and a dash at base of sub-costal; shoulder and abdominal margin lightly silvered.

Body above covered with fulvous hairs, beneath, thorax grey buff,

abdomen buff; legs fulvous; palpi white furnished in front with long fulvous hairs that are black at tips; antennæ fuscous above, fulvous below, greyish next club; club black, tip fulvous.

Female.—Same size. Color pale, the submarginal spots still paler than the ground, rather a sordid white, as are also the spots across disk of secondaries; the marginal lines confluent and the lunules heavy, especially on secondaries; otherwise like male; under side like male, the lighter portions of fringes nearly white.

This lovely species was first brought to notice by Mr. Mead, who took a single male in perfect condition at Turkey Creek Junction, in Colorado in 1871. Subsequently a female was brought in by the Hayden Yellowstone Expedition, taken the same season.

Grapta Hylas, n. sp.

Male.—Expands 1-7 inch. Upper side dull red fulvous, fading towards margins; hind margin of primaries broadly bordered with dark brown, on the anterior edge of which is a series of yellow dentations; on costa a ferruginous sub-apical patch and another on inner margin near angle; spots as in *Faunus*; secondaries have a diffuse fuscous border extending over one-third the wing, fading gradually into fulvous on disk, and enclosing a sub-marginal series of small yellow spots; a large black spot on costa and a small one on arc, the two being often joined and sometimes confluent; abdominal margin much obscured by brown; edges of hind margins covered with yellow scales; fringes white in the emarginations, fuscous at tips of nervules.

Under side marbled in shades of grey, tinted with brown near base and throughout streaked with black or fuscous; the basal space limited on disk by a band with outline as in *Faunus*; in cell three spots disposed as in *Faunus*; the extra-basal space nearly uniformly grey, mottled with darker shades; the usual sub-apical patch on primaries scarcely lighter than the rest; across the disks a complete series of brown points which on primaries are mostly edged with grey-white scales, but on secondaries are nearly lost in the grey shade of the wing; incision of primaries bordered by dark-brown or blackish lunations; on secondaries these are broken into separated serrated spots from apex to tail and often more or less wanting; discal mark silvered, very slender, curved, open, not barbed but attenuated, especially the lower limb which equals the other in length.

Body fuscous above dark grey tinted with brown below; legs and palpi grey; antennæ dark above, fuscous below; club black, tip yellow.

Female.—Expands 1.8 inch. Upper side paler, yellow-fulvous beyond disk; yellow spots larger; under side iron-grey, suffused at base with brown; the markings nearly obsolete; discal spot nearly obsolete; sometimes this is a narrow line bent at an obtuse angle.

From about 20 specimens taken in Colorado, in August 1871, by Mr. Mead. These were found in company with *G. Zephyrus* and *Vanessa Antiopa*. The species is near *Faunus* in many respects but differs decidedly in the coloration of under surface, and in the shape of the silver mark. The upper side also shows nothing of the intense fulvous of *Faunus*.

Satyrus Charon. n. sp.

Male.—Expands from 1.5 to 1.7 inch. Upper side dark brown; hind margins bordered by two fine parallel lines, a little anterior to which is a third line, not distinct; primaries have a blackish band along posterior side of cell, as in *S. Silvestris*; also two ocelli beyond disk, the upper and larger always present, the other sometimes wanting, or a mere point; these are black in faint yellowish rings, though the rings are sometimes obsolete; fringes of secondaries brown, of primaries brown mixed with grey. Under side of primaries brown with a slight tint of yellow; the marginal and sub-marginal lines distinct; costa and apex greyish; the basal portion streaked with brown; the ocelli black in bright buff rings and with white central dots; secondaries brown mottled with grey, especially on outer limb and next base, and throughout much streaked with brown; the inner of the two marginal lines diffuse and the sub-marginal much scalloped towards outer angle; the disk crossed by a dark band with blackish irregular edges; the ocelli minute, consisting of black spots with white central dots, and varying from one to six on individuals.

Body, legs and palpi dark brown; antennæ annulated with brown and whitish above, whitish below; club pale fulvous.

Female.—Expands 1.7 inch. Paler than the male, but similarly marked.

This species was first met with by Mr. Mead, in Colorado, near the Twin Lakes, in Upper Arkansas Valley, (elevation 8000 feet) in July 1871. It flew near the ground, frequently alighting on the sagebrush, and seemed much more partial to flowers than was *Satyrus Ridingsii*, also common in that vicinity. By the latter part of July it was abundant throughout the entire Park and mountain country and so continued till September.

Erebia Meadii, n. sp.

Male.—Expands 1.5 to 1.7 inch. Upper side light brown; primaries have a large, sub-triangular, fulvous patch on disk, within which are two large black ocelli, each with minute white pupil; secondaries have a single small black ocellus in ferruginous ring and with white pupil, the latter sometimes wanting. Under side brown covered with blackish streaks, mostly abbreviated; both wings edged by two parallel dark lines, the inner one of which is diffuse on secondaries, and at a little distance anterior is a third line, wavy and diffuse; the fulvous space on primaries deeper colored and occupying a larger portion of the wing than on upper side, reaching nearly to base; the ocelli as above but each surrounded by an ochraceous ring; on secondaries are two small ocelli with white pupils, one being in lower median interspace and the other in sub-median; across the disk a wavy dark band and another nearly parallel towards base.

Body fuscous, legs and palpi same; antennæ annulated fuscous and whitish above, whitish below; club fulvous.

Female.—Expands 1.8 inch. Color paler, the fulvous less intense, similarly marked; sometimes a black dot mid-way between the two ocelli and a small black spot below and near the lower one.

Found by Mr. Mead, at Bailey's Ranch, in the South Park, Colorado, about 45 miles from Denver, during the last week of August 1871. Although not found at a few miles on either side of this point it did not seem to be uncommon there. Altogether 49 specimens were taken, a few of them perfect, but the greater part old and worn. They should be looked for about 1st of August.